

REMARKS

The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the foregoing amendment and the following remarks.

In the present response the applicants has canceled Claim 11-13 and 24-25. Accordingly, Claims 1-10, 14-20, 22-23 and 26-29 are currently pending in the application.

I. Rejection of Claims 11-13 and 24-25 under 35 U.S.C. § 102

The Examiner has rejected Claims 11-13 and 24-25 under 35 U.S.C. §102(b) as being anticipated by each one of Kaisaki *et al.*, WO 96/13538 ("Kaisaki"); Oxman *et al.*, WO 99/62460 ("Oxman"); or Neckers *et al.*, U.S. Patent 5,639,802 ("Neckers"). These rejections are rendered mooted because the Applicants have canceled Claims 11-13 and 24-25.

II. Rejection of Claims 1-10, 14-20, 22-23 and 26-29 under 35 U.S.C. § 103

The Examiner has rejected Claims 1-10, 14-20, 22-23 and 26-29 under 35 U.S.C. §103(a) as being unpatentable over either Campbell, *et al.*, "Fabrication of Photonic Crystals for the Visible Spectrum by Holographic Lithography, Nature", Vol. 404, pp. 53-56 (03/2000). ("Campbell"), or Turberfield, "Photonic Crystals made by Holographic Lithography," MRS Bull, pp. 632-636 (08/2001) ("Turberfield"), in view of U.S. Patent 5,639,802 to Popovich *et al.* ("Popovich"), Neckers and Oxman. The Examiner also has rejected Claims 1-10, 14-20, 22-23 and 26-29 under 35 U.S.C. §103(a) as being unpatentable over either Campbell or Turberfield, in view of Popovich, Neckers, Oxman, and further in view of U.S. Patent 4,402,571 to Cowan *et al.*

The Applicants respectfully disagree.

As pointed out in the response filed on February 28, 2006, the Examiner has indicated that the inclusion of a neutralizer as a claim limitation would obviate a §102 rejection based on Turberfield (Examiner's Office Action of December 7, 2005, Page 5, Line 11). The same statement should also apply to the rejection based on Campbell because Turberfield is a review article that cites back to Campbell (*see e.g.*, Turberfield, Page 633, Column 3). The Examiner now apparently cites Popovich, Neckers and Oxman in a §103 rejection for the proposition of teaching acid neutralizer molecules.

The Applicants submit that the asserted combination of Campbell or Turberfield with Popovich, Neckers and Oxman fail to establish a *prima facie* case of obviousness because these combinations are improper.

The Examiner asserts that it would be have been obvious to modify Campbell or Turberfield's process:

...with amine coinitors/polymerization modifiers to extend the spectral response of these compositions and control the rate and onset of polymerization as disclosed by Neckers et al. '802 and Oxman et al. WO99/62460 and to use a longer wavelength laser, such as the 488 nm output of an argon ion laser to perform the interferometric exposure as taught by Popovich et al. '152 which ahs [sic] the benefit of the laser beams being visible to the eye, which allows easy adjustment of the laser beams. (Examiner's Office Action of May 23, 2006, Page 6, Lines 4-10)

The Examiner further argues that:

The motivation is different from the reasons asserted by the applicant, as the references use the recited amines as co-initiators, but the induction effect is recognized in the art as evidenced by Oxman et al. WO99/62460. The increase in the speed of initiation once it has begun clearly translated to an increase in photospeed. The rejection stands. Also these couple well with the xanthene dyes to extend the spectral response of the composition. (Examiner's Office Action of May 23, 2006, Page 6, Lines 15-21)

The Applicants submit that the combination of Campbell or Turberfield with Popovich, Neckers and Oxman as applied by the Examiner is improper because no prior art motivation has been

presented to modify Campbell or Turberfield's process according to the asserted teachings of Popovich, Neckers and Oxman. Rather, the Examiner has used hindsight to make these combinations.

The case law makes clear that one "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *Ecolochem, Inc. v. So. California Edison*, 56 USPQ2d 1065, 1073 (Fed. Cir. 2000), *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1780, 1783 (Fed. Cir. 1988). Hindsight knowledge of the Applicants' disclosure when the prior art does not teach or suggest such knowledge, results in the use of the invention as a template for its own reconstruction. This is inappropriate in the determination of patentability. *Sensonics Inc. v. Garlock, Inc.*, 220 USPQ 303, 312-313 (1983).

It is not apparent to the Applicants why one of ordinary skill in the art would be motivated to modify Campbell or Turberfield's process to extend the spectral response of these compositions, control the rate and onset of polymerization, or use a longer wavelength laser, as suggested by the Examiner.

For instance, Examiner has not explained why Popovich's teachings of the use of a photoinitiator dye allowing a sensitivity wavelengths in the visible spectrum (Popovich, Column 8, Line 35 to Column 9, Line 6) would motivate one to modify Campbell or Turberfield's use of a laser wavelength of 355 nm, when Turberfield teaches that their Epon-type photoresist has low intrinsic absorption at this wavelength (Turberfield, Page 633, Column 3, Lines 28-29). Moreover, the Examiner has not pointed out where Campbell or Turberfield have identified the adjustment of their laser beam as being problematic. Nor is it apparent to the Applicants why Popovich's teachings that a coinitiator that can control the rate of curing in a free radical polymerization reaction of prepolymer material would motivate one to modify Campbell or Turberfield's process to include such a

compound, when the Examiner has not cited disclosure by Campbell or Turberfield that the control of their acid catalyzed process is problematic.

The Examiner has also not explained why Example 1 in Neckers would motivate one to modify Campbell or Turberfield's process by adding N,N,2,4,6-pentamethylaniline. Neckers's Example 1 (Neckers, Column 14, Lines 34-41) discloses that a cyclohexene oxide solution containing certain concentrations of ethyl erythrosine, diphenyliodonium hexafluoroantimonate, and N,N,2,4,6-pentamethylaniline, and which when irradiated with visible light, is completely cured after 10 minutes of irradiation. .

In contrast, Campbell or Turberfield's process uses a comparatively much shorter (6 ns) duration laser pulse, and Campbell states that:

the duration of exposure is short compared to the timescales of the physical and chemical processes induced by exposure, so the interference pattern is unperturbed by photoinduced changes in the refractive index of the precursor. The short exposure also eases constraints on the mechanical stability of the optical components. (Campbell, Page 54, Column 1, Lines 28-31)

Given that Campbell or Turberfield disclose that the chemical and physical processes induced by exposure are longer than their exposure times, and that there are benefits associated with a shorter exposure time, it is not clear to the Applicants why one of ordinary skill in the would be motivated to include of one or more of the compounds used in Example 1 of Necker's, including N,N,2,4,6-pentamethylaniline which is used in a process having a 10 minute irradiation time. Rather, Necker's use of a 10 minute irradiation in conjunction with N,N,2,4,6-pentamethylaniline would appear to not have a reasonable expectation of success, given Campbell's disclosure of the benefits of easing constraints on the mechanical stability of optical components by using a short exposure time.

Additionally, the Examiner has not explained why one would have been motivated to

modify Campbell or Turberfield's process by adding Oxman's modifiers. Oxman discloses that certain cationic polymerization modifiers can delay the initiation of cationically polymerizable groups (Oxman, Page 10, Line 26) and upon initiation, increase the rate of polymerization (Oxman, Page 11, Lines 17-18). However, the Applicants cannot find (nor has the Examiner cited), disclosure by Campbell or Turberfield that delaying the initiation of polymerization or increasing the rate of polymerization are desirable in their process.

The rejections based on the combination of Campbell or Turberfield with Popovich, Neckers and Oxman, further in view of Cowan are improper for the same reasons as stated above, in so far as Cowan is cited by the Examiner only for the proposition of teaching the use of argon and HeCd lasers.

In view of the foregoing remarks, the cited references do not support the Examiner's rejection of Claims 1-10, 14-20, 22-23 and 26-29 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner withdraw the rejection.

Should the Examiner wish to maintain these grounds of rejection, the Applicants would appreciate it if the Examiner could clearly communicate the basis for the rejection, and provide a written record that clearly explains the rationale for decisions made during prosecution of the application, so that the issues can be identified early and the Applicant is given fair opportunity to reply. (MPEP §706.02(j))


III. Conclusion

In view of the foregoing amendment and remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a timely Notice of Allowance for Claims 1-10, 14-20, 22-23 and 26-29.

It is not believed that any fees are due regarding this matter, however, the Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 08-2395.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,
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